

What is claimed is:

1. A broadcasting apparatus using an OFDM modulation method, in which a band is divided into a plurality of layers, and a modulation method is set for each layer,

5 characterized in that the broadcasting apparatus using an OFDM modulation method comprises modulation level setting means for setting a modulation level of a carrier for each layer, and in said modulation level setting means, the modulation level of said carrier is set so that a
10 receivable range of a modulation signal of each layer becomes the same range as each other.

2. A broadcasting apparatus using an OFDM modulation method recited in claim 1, characterized in that, in said
15 modulation level setting means, a modulation level of a layer for video signal modulation is held at a predetermined level, and a modulation level of a layer for voice signal modulation is reduced below a predetermined level.

20 3. A broadcasting apparatus using an OFDM modulation method recited in claim 1, characterized in that the apparatus further comprises amplification means for amplifying a modulation signal of each layer after
25 modulation level setting to predetermined transmission

electric power.

4. A broadcasting apparatus using an OFDM modulation
method recited in claim 3, characterized in that said
predetermined transmission electric power is average
electric power of a band in a case where a modulation
level of each layer is the same as each other.

5. A broadcasting apparatus using an OFDM modulation
method recited in claim 1, characterized in that any of
64QAM modulation, 16QAM modulation and DQPSK modulation is
used for the video signal modulation, and QPSK modulation
is used for the voice signal modulation.

6. A broadcasting apparatus using an OFDM modulation
method recited in claim 1, characterized in that said each
layer is further divided into a singular segment or a
plurality of segments.

7. A broadcasting apparatus using an OFDM modulation
method recited in claim 1, wherein the apparatus
comprising:

a serial-parallel conversion circuit for converting
a serial data for each layer into a parallel data in
accordance with a modulation method,

an interleave circuit for delaying and interleaving a parallel data for every bit, which is output from said serial-parallel conversion circuit,

a carrier modulation circuit for conducting mapping on coordinates of I and Q axes in accordance with a modulation method of each carrier,

a modulation method setting circuit for extracting a modulation method of a carrier from a control data corresponding to a serial data for said every layer, and setting a modulation method in each block, and

said modulation level setting means for setting a modulation level of a carrier to be mapped, based on a modulation method set in said modulation method setting circuit.

8. A broadcasting apparatus using an OFDM modulation method recited in claim 7, characterized in that an arrangement between said serial-parallel conversion circuit and said modulation level setting means is constructed by only one layer, and a data of a modulation method different from others is included in a data for said one layer.

9. A broadcasting apparatus using an OFDM modulation method recited in claim 7, characterized in that the

apparatus further comprises:

an OFDM frame generating circuit for conducting a carrier arrangement of a data mapped in said carrier modulation circuit in accordance with an arrangement of a symbol and a frame of OFDM, and

a frame information generating circuit for extracting OFDM frame arrangement information from said control data, and outputting it to said OFDM frame generating circuit.

10. A broadcasting apparatus using an OFDM modulation method recited in claim 1, characterized in that the apparatus is constructed of a studio device for conducting digital conversion and signal compression of video and voice, an OFDM modulation device for conducting OFDM modulation of a digital signal after the compression, and a transmission device for amplifying the digital signal after the OFDM modulation and transmitting it, and said OFDM modulation device includes said modulation level setting means.

11. A broadcasting apparatus using an OFDM modulation method recited in claim 10, characterized in that said transmission device comprises said amplification means for amplifying the digital signal after the OFDM modulation to

a predetermined transmission electric power.

12. A broadcasting apparatus using an OFDM modulation
method recited in claim, characterized in that said OFDM
modulation device comprises a layer division section for
conducting layer division of the digital signal from said
studio device, an error correction coding section for
conducting error correction coding of the signal for every
layer after the layer division, a byte-interleave section
for byte-interleaving the digital signal after the error
correction coding, a convolution coding section for
conducting convolution coding of the byte-interleaved
digital signal, and a punctured coding section for
conducting punctured coding of the convolution-coded
digital signal.

13. A broadcasting apparatus using an OFDM modulation
method recited in claim 10, characterized in that said
OFDM modulation device includes an inverse Fourier
transform section for conducting inverse Fourier transform
of I channel and Q channel modulation data from said OFDM
frame generating circuit, a first local oscillator, a
phase shift section for shifting a phase of an output from
said first local oscillator, an integration section for
integrating each output from said inverse Fourier

transform section and an output from said phase shift
section, an adder for adding outputs from said integration
section, a digital/analog converter for converting an
output from said adder into an analog data, a second local
5 oscillator, and an integration section for integrating an
output from said second local oscillator and an output
from said digital/analog converter.